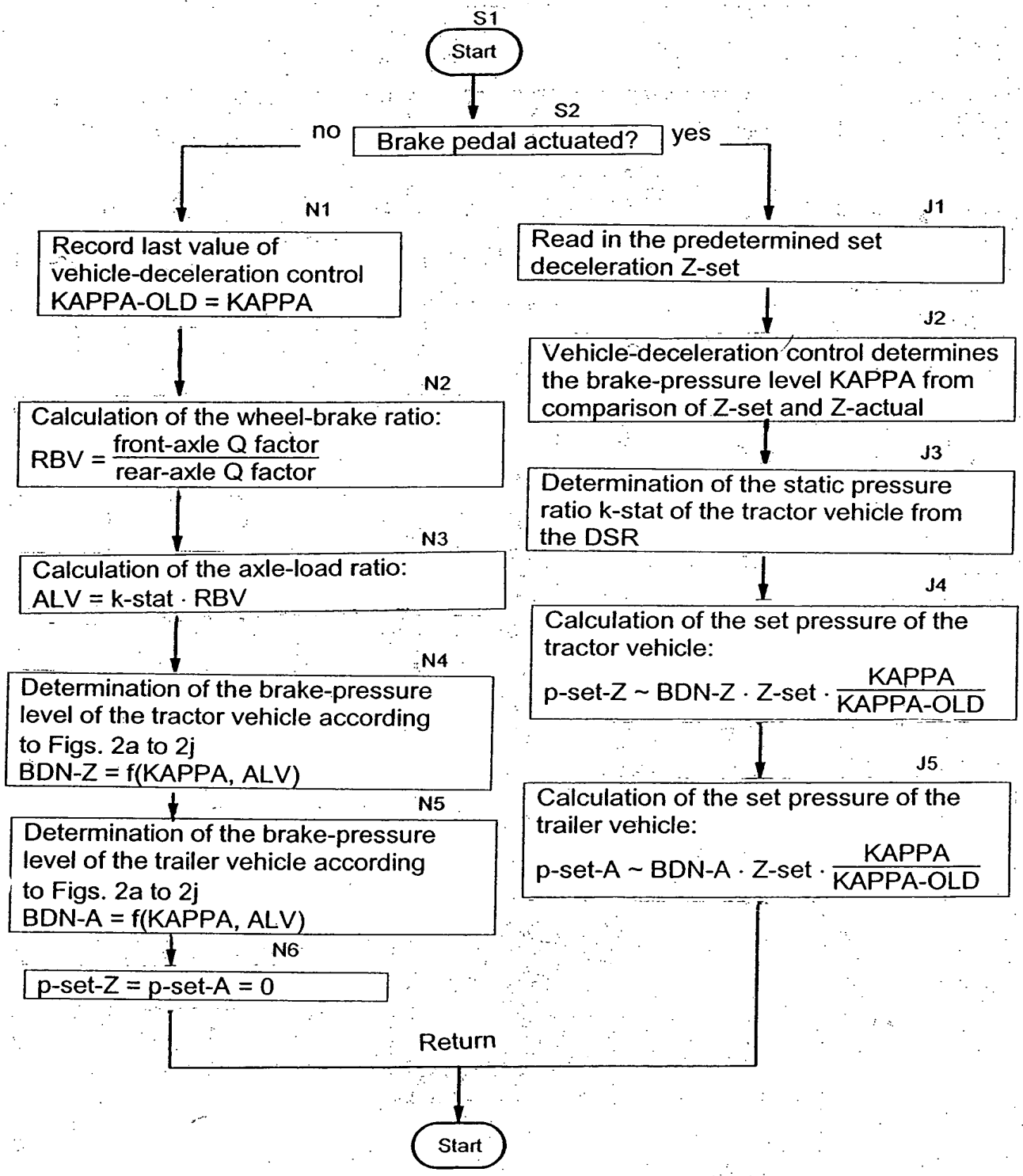

S1
Start
S2
Brake pedal actuated?
no
yes
N1
Record last value of vehicle-deceleration control KAPPA-OLD = KAPPA
N2
Calculation of the wheel-brake ratio: RBV = front-axle Q factor / rear-axle Q factor
N3
Calculation of the axle-load ratio: ALV = k-stat · RBV
N4
Determination of the brake-pressure level of the tractor vehicle according to Figs. 2a to 2j BDN-Z = f(KAPPA, ALV)
N5
Determination of the brake-pressure level of the trailer vehicle according to Figs. 2a to 2j BDN-A = f(KAPPA, ALV)
N6
p-set-Z = p-set-A = 0
J1
Read in the predetermined set deceleration Z-set
J2
Vehicle-deceleration control determines the brake-pressure level KAPPA from comparison of Z-set and Z-actual
J3
Determination of the static pressure ratio k-stat of the tractor vehicle from the DSR
J4
Calculation of the set pressure of the tractor vehicle: p-set-Z ~ BDN-Z · Z-set · KAPPA / KAPPA-OLD
J5
Calculation of the set pressure of the trailer vehicle: p-set-A ~ BDN-A · Z-set · KAPPA / KAPPA-OLD
Return
Start

Fig.1

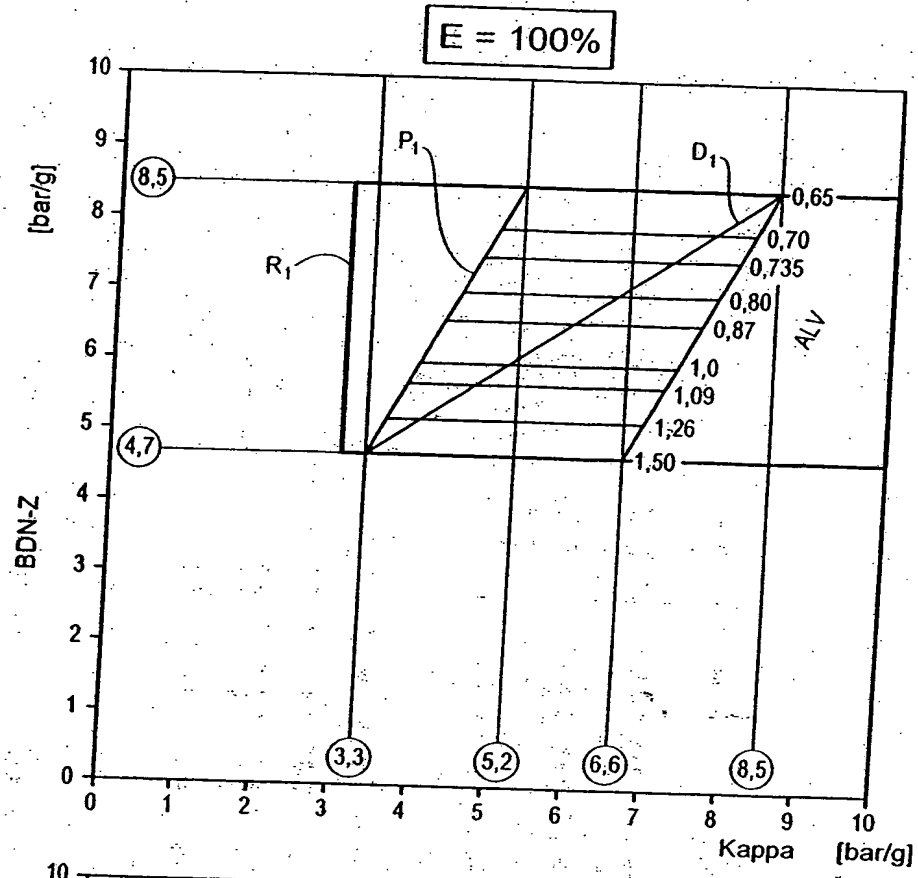

E = 100%
P1
D1
R1
ALV
0,65
0,70
0,735
0,80
0,87
1,0
1,09
1;26
1,50
8,5
4,7
3,3
5,2
6,6
8,5
[bar/g]
BDN-Z
Kappa [bar/g]

Fig.2a

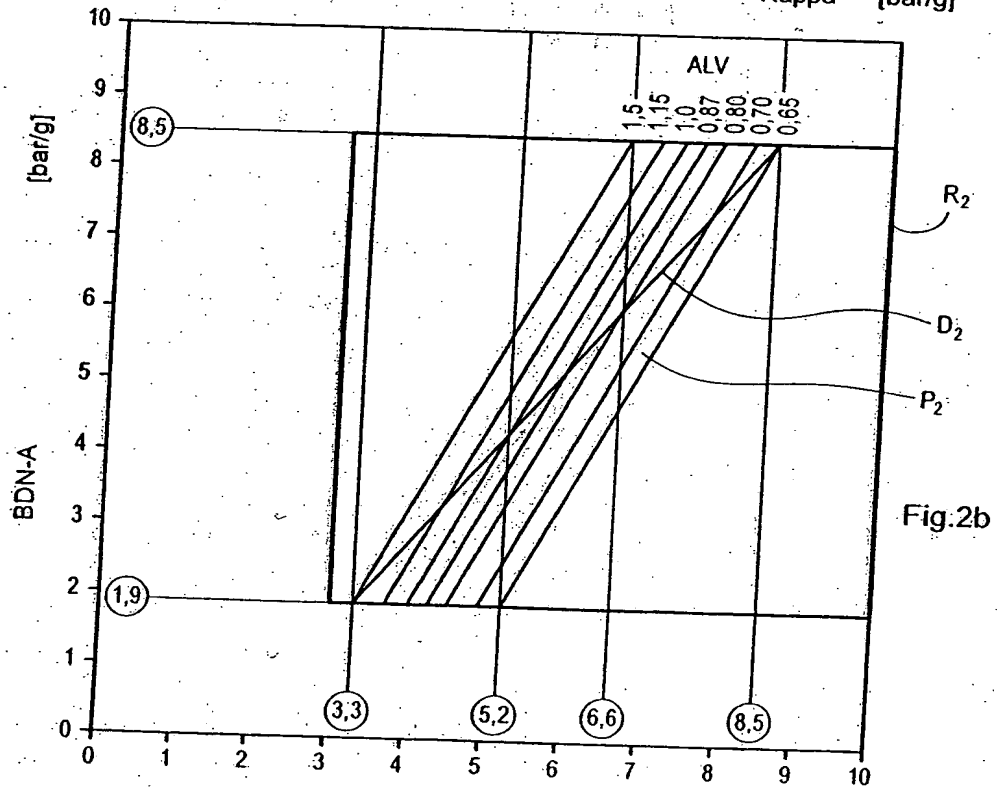

ALV
1,5
1,15
1,0
0,87
0,80
0,70
0,65
R2
D2
P2
8,5
1,9
3,3
5,2
6,6
8,5
[bar/g]
BDN-A

Fig.2b

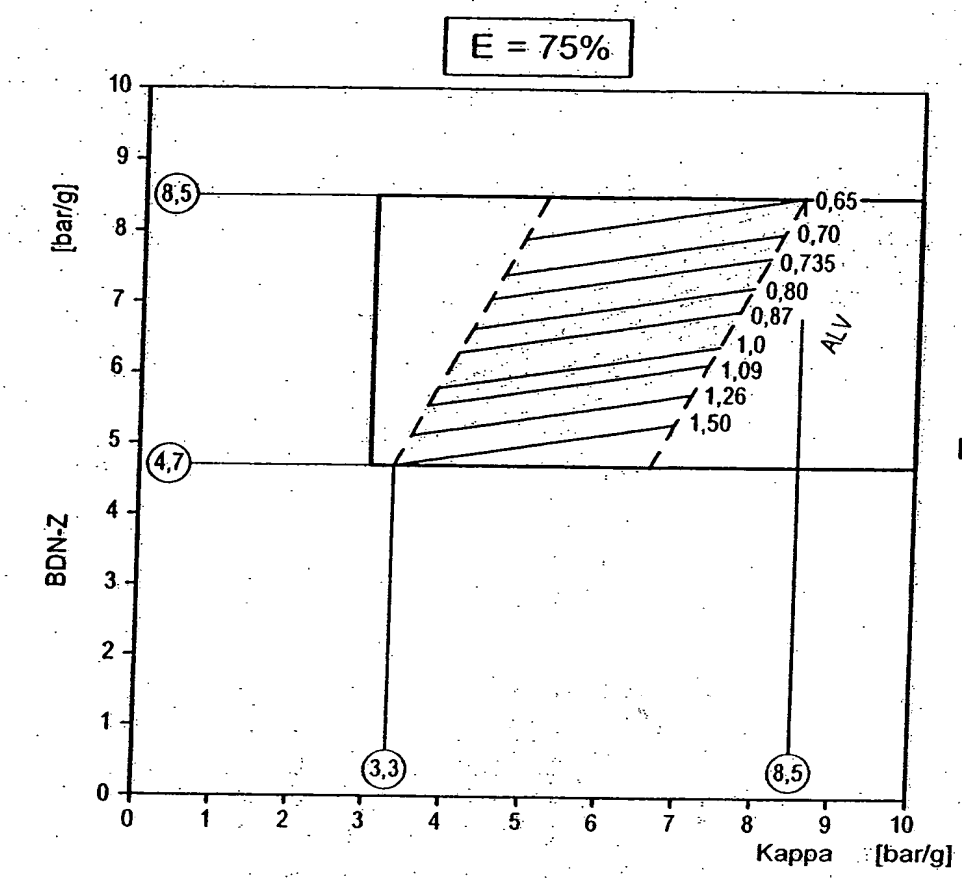

E = 75%
BDN-Z
[bar/g]
8,5
4,7
3,3
8,5
0,65
0,70
0,735
0,80
0,87
1,0
1,09
1,26
1,50
ALV
Kappa [bar/g]

Fig.2c

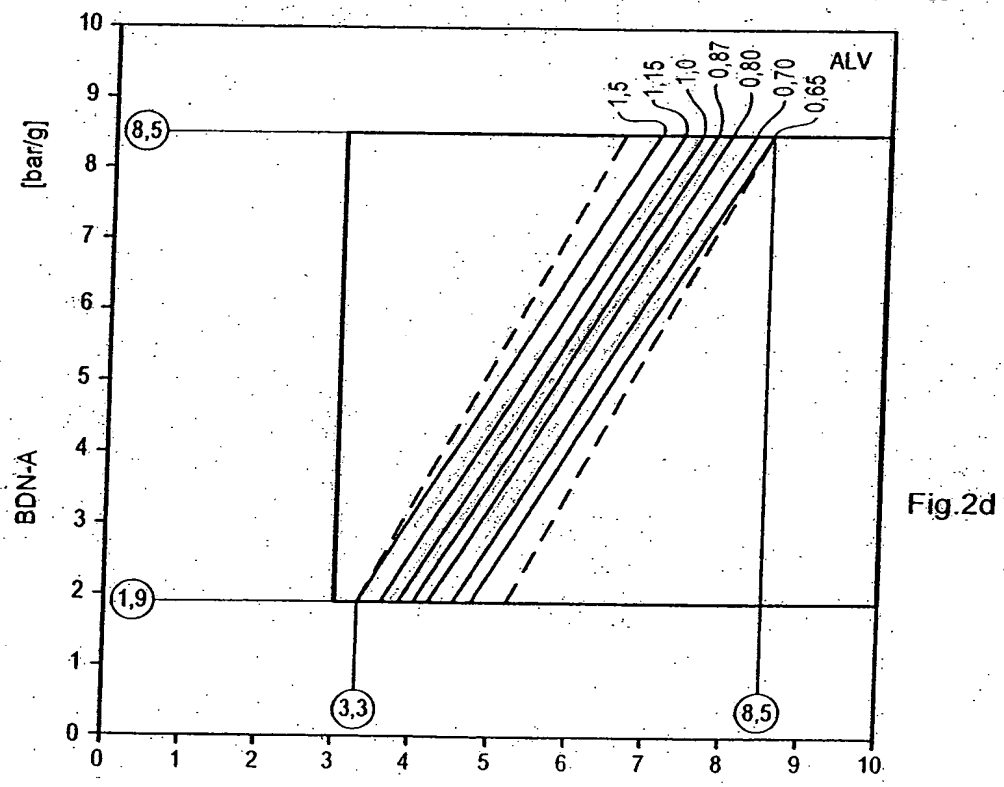

BDN-A
[bar/g]
8,5
1,9
3,3
8,5
1,5
1,15
1,0
0,87
0,80
0,70
0,65
ALV

Fig.2d

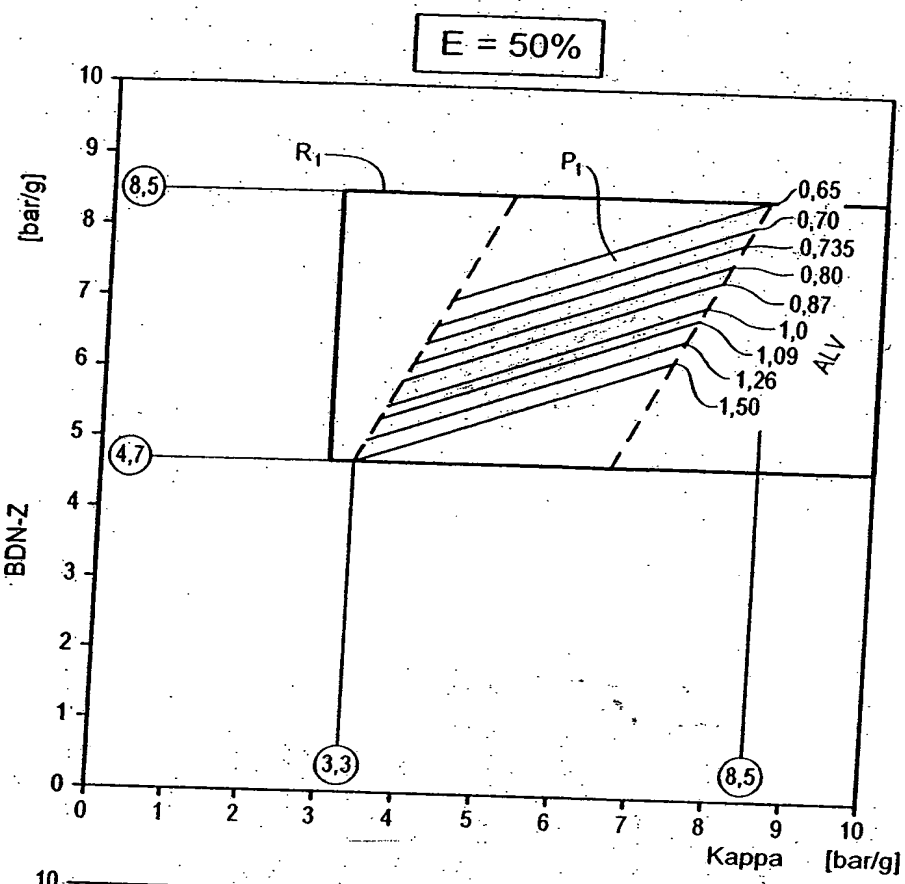

E = 50%
R1
P1
8,5
4,7
3,3
8,5
0,65
0,70
0,735
0,80
0,87
1,0
1,09
1,26
1,50
ALV
BDN-Z
[bar/g]
Kappa
[bar/g]

Fig.2e

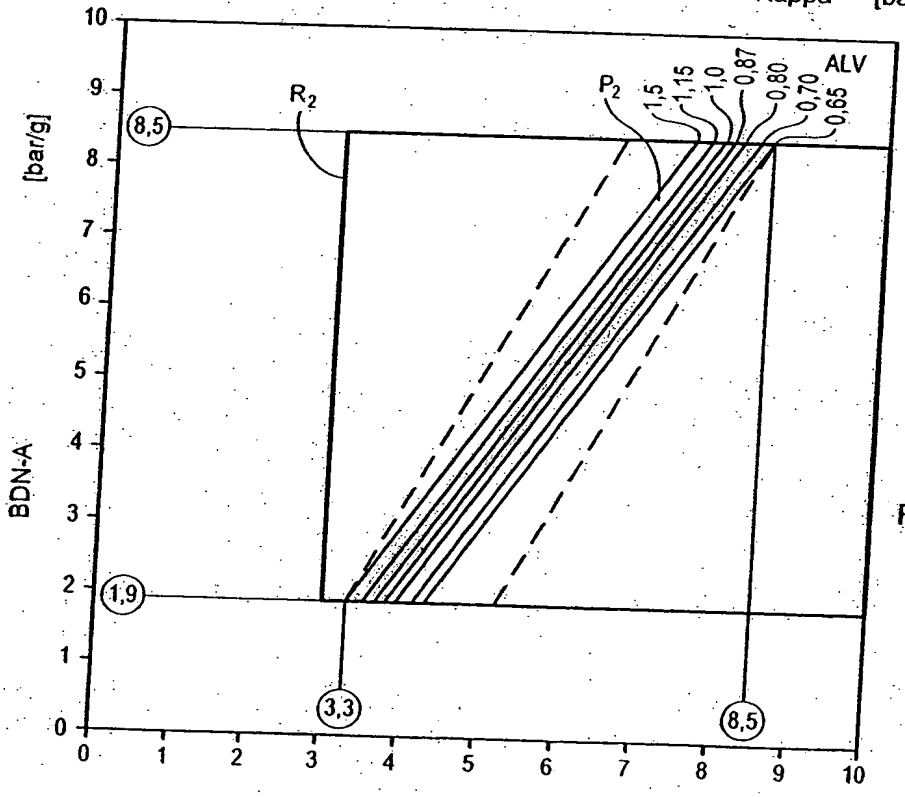

R2
P2
8,5
1,9
3,3
8,5
1,5
1,15
1,0
0,87
0,80
0,70
0,65
ALV
BDN-A
[bar/g]

Fig.2f

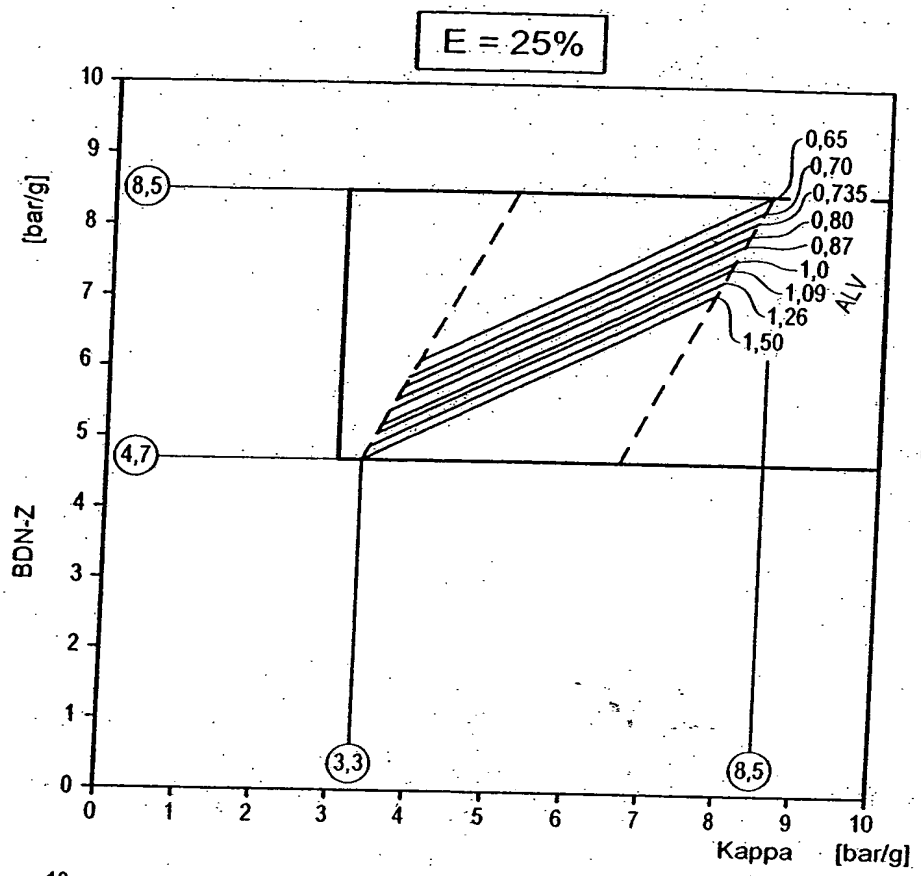

E = 25%
BDN-Z
[bar/g]
Kappa [bar/g]
ALV
0,65
0,70
0,735
0,80
0,87
1,0
1,09
1,26
1,50
8,5
4,7
3,3
8,5

Fig.2g

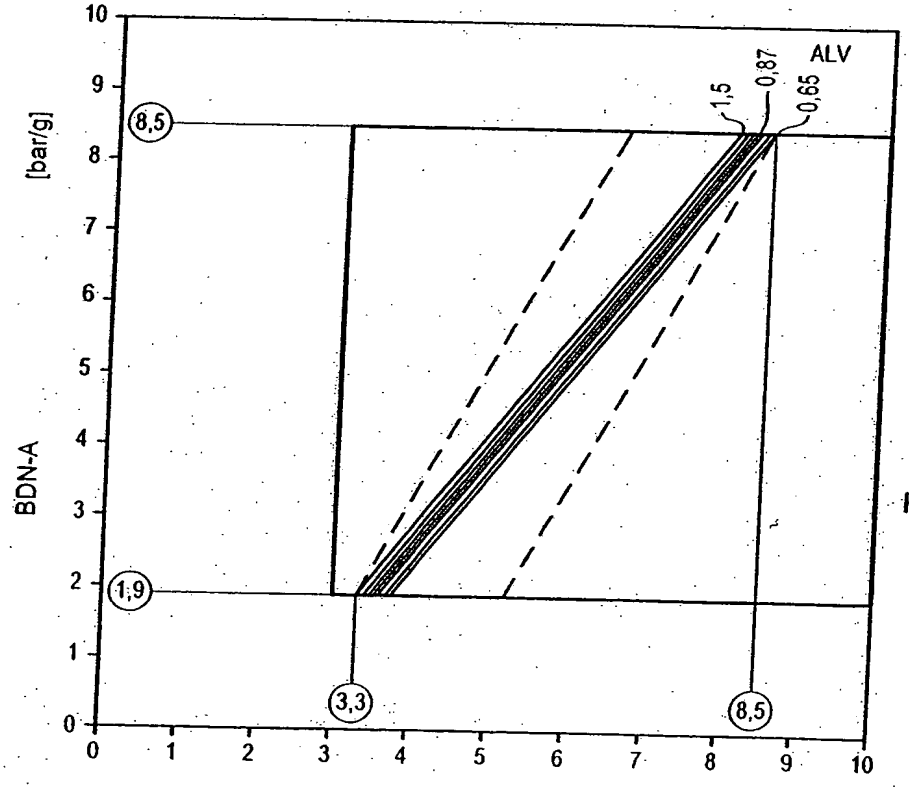

BDN-A
[bar/g]
ALV
1,5
0,87
0,65
8,5
1,9
3,3
8,5

Fig.2h

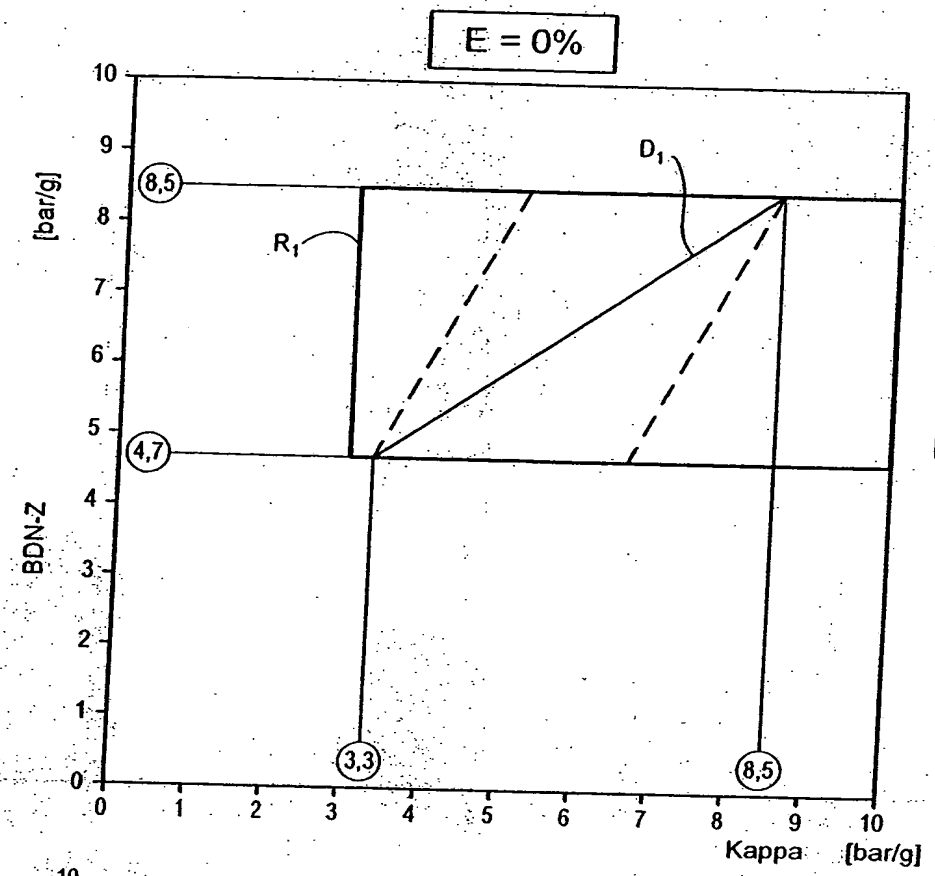

E = 0%
[bar/g]
BDN-Z
Kappa [bar/g]
R1
D1
8,5
4,7
3,3
8,5

Fig.2i

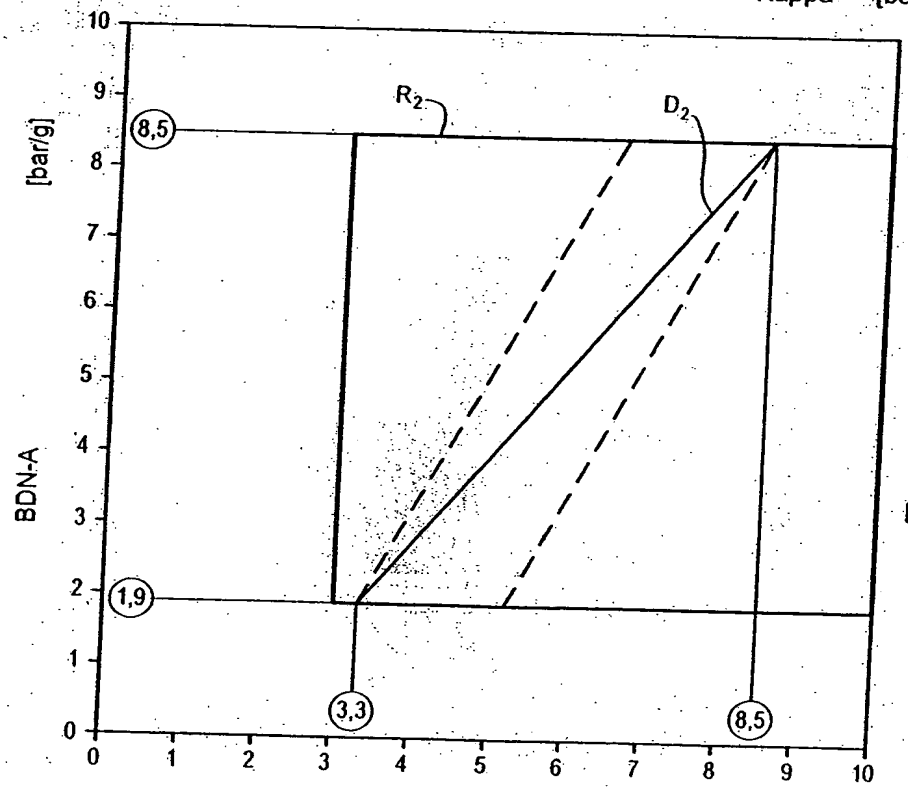

[bar/g]
BDN-A
R2
D2
8,5
1,9
3,3
8,5

Fig.2j

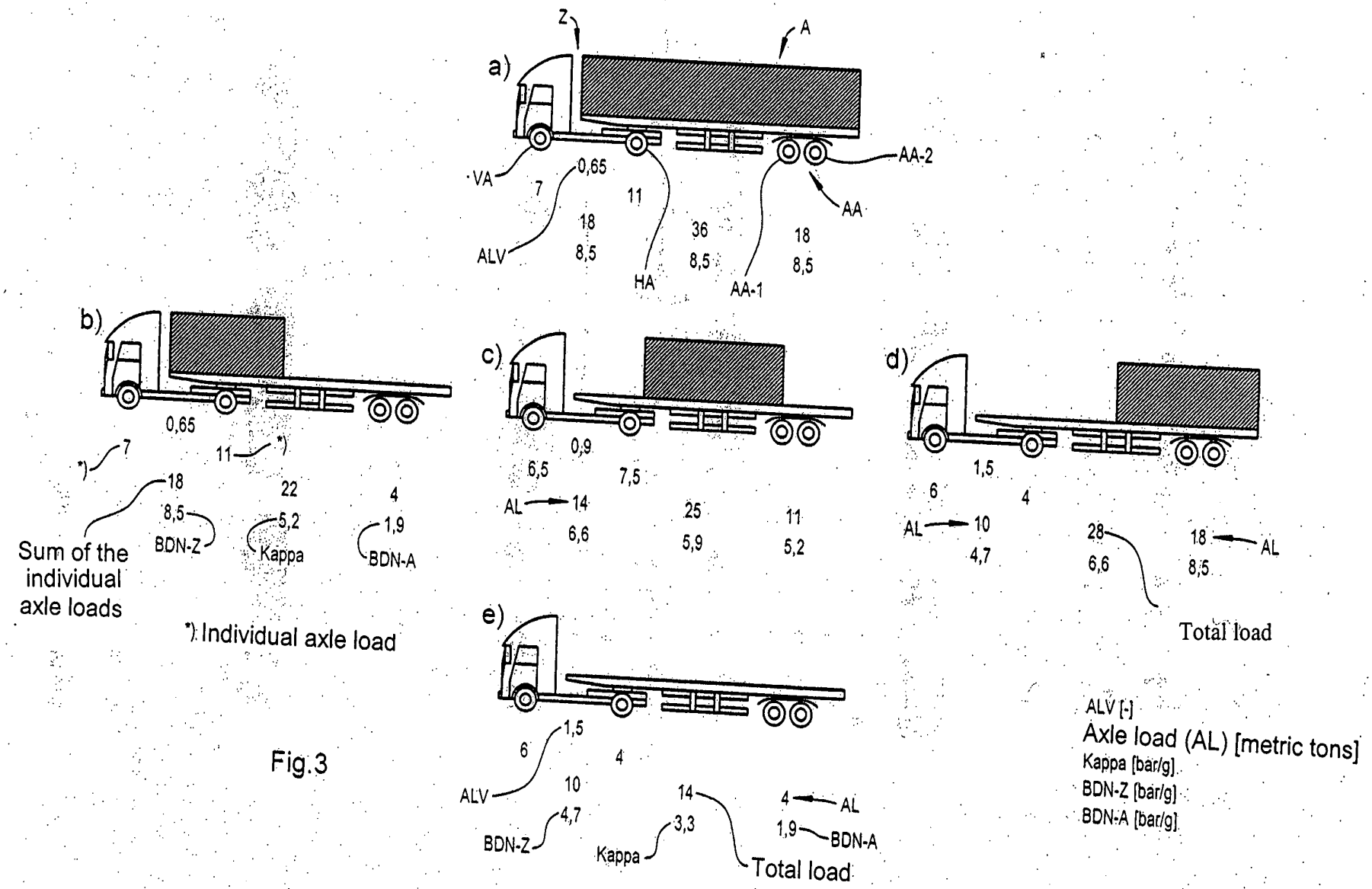

a)
Z
A
VA
AA-2
AA
ALV
HA
AA-1
0,65
7
11
18
8,5
36
8,5
18
8,5
b)
0,65
*)
7
11
*)
18
8,5
22
5,2
4
1,9
Sum of the individual axle loads
BDN-Z
Kappa
BDN-A
*) Individual axle load
c)
0,9
6,5
7,5
AL
14
6,6
25
5,9
11
5,2
d)
1,5
6
4
AL
10
4,7
28
6,6
18
8,5
AL
Total load
e)
1,5
6
4
ALV
10
4,7
BDN-Z
14
3,3
Kappa
4
AL
1,9
BDN-A
Total load
ALV [-]
Axle load (AL) [metric tons]
Kappa [bar/g]
BDN-Z [bar/g]
BDN-A [bar/g]

Fig.3

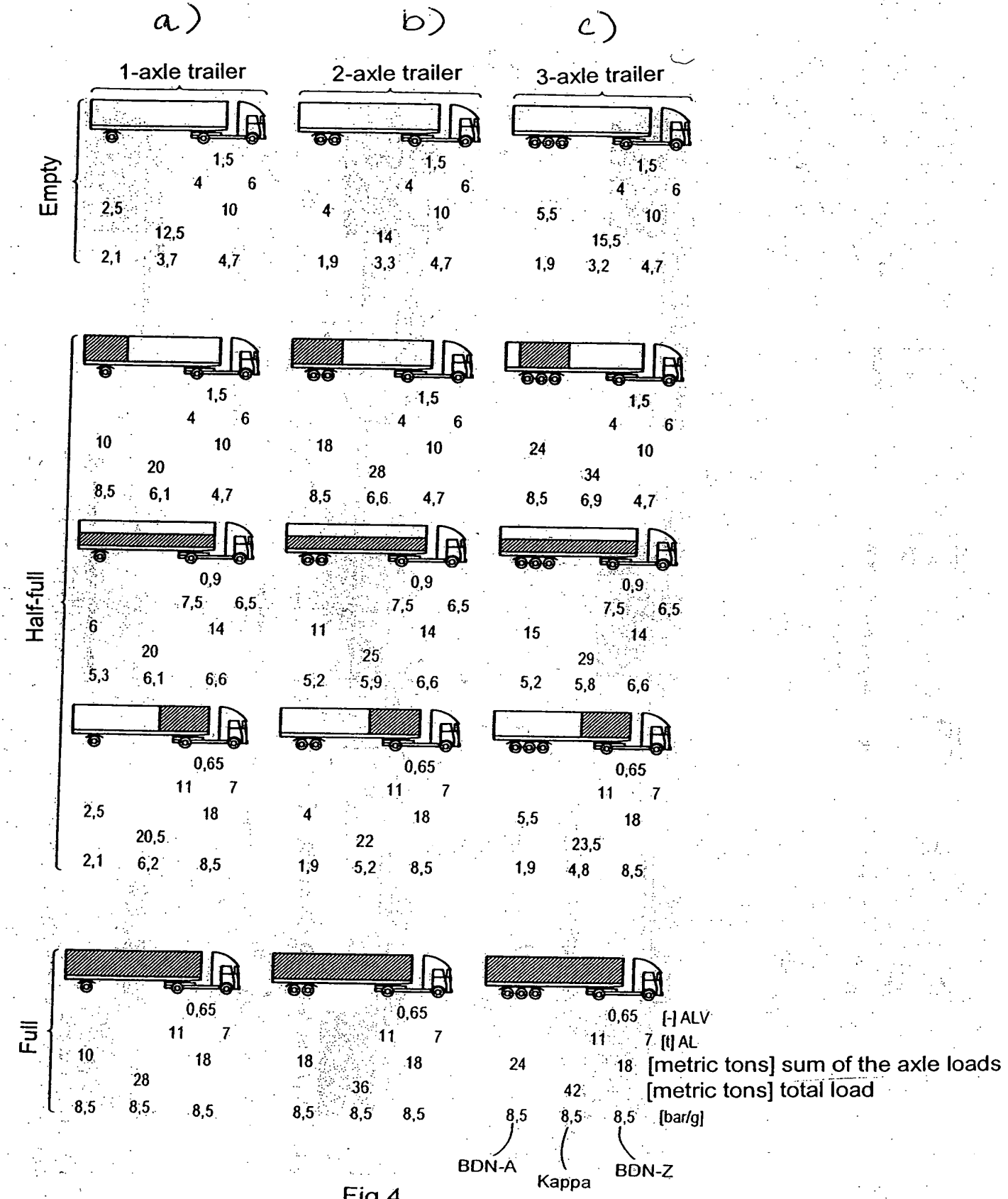
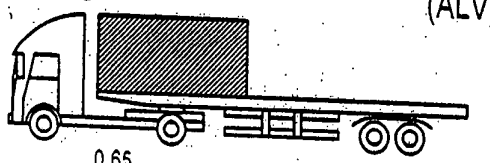

a)
b)
c)
1-axle trailer
2-axle trailer
3-axle trailer
Empty
Half-full
Full
1,5
4
6
2,5
10
12,5
2,1
3,7
4,7
1,5
4
6
4
10
14
1,9
3,3
4,7
1,5
4
6
5,5
10
15,5
1,9
3,2
4,7
1,5
4
6
10
10
20
8,5
6,1
4,7
1,5
4
6
18
10
28
8,5
6,6
4,7
1,5
4
6
24
10
34
8,5
6,9
4,7
0,9
7,5
6,5
6
14
20
5,3
6,1
6,6
0,9
7,5
6,5
11
14
25
5,2
5,9
6,6
0,9
7,5
6,5
15
14
29
5,2
5,8
6,6
0,65
11
7
2,5
18
20,5
2,1
6,2
8,5
0,65
11
7
4
18
22
1,9
5,2
8,5
0,65
11
7
5,5
18
23,5
1,9
4,8
8,5
0,65
11
7
10
18
28
8,5
8,5
8,5
0,65
11
7
18
18
36
8,5
8,5
8,5
0,65
11
7
24
18
42
8,5
8,5
8,5
[-] ALV
[t] AL
[metric tons] sum of the axle loads
[metric tons] total load
[bar/g]
BDN-A
Kappa
BDN-Z

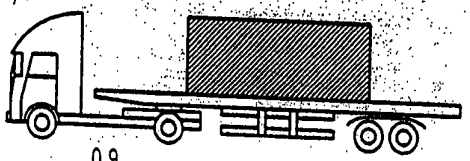
Fig.4

Fig.5

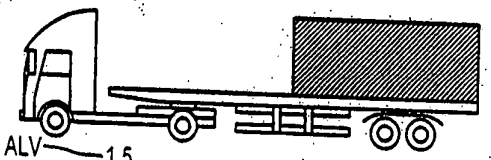
Influencing factor for axle-load ratio (ALV) = 1,0



[-] 0,65 2 2
[t] 7 11 4
[t] 18 22
[bar/g] 8,5 5,2 a) 1,9

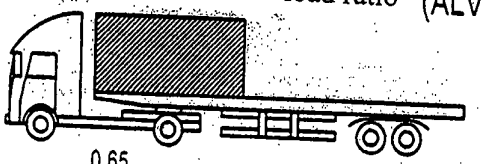


[-] 0,9 5,5 5,5
[t] 6,5 7,5 11
[t] 14 25
[bar/g] 6,6 5,9 b) 5,2

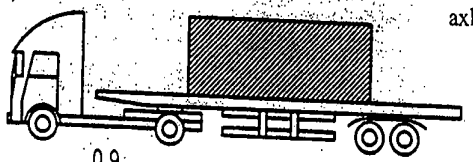


[-] ALV 1,5
[t] 6 4 9 9
[t] Individual axle loads
[bar/g] 10 28 18
4,7 6,6 8,5
Sum of the individual axle loads — BDN-Z — Kappa — BDN-A — Sum of the individual axle loads
Total load
c)

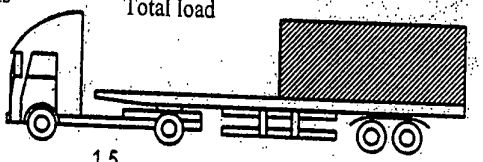
Influencing factor for axle-load ratio (ALV) = 0,5



[-] 0,65 2 2
[t] 7 11 4
[t] 18 22
[bar/g] 7,3 5,2 d) 3,1

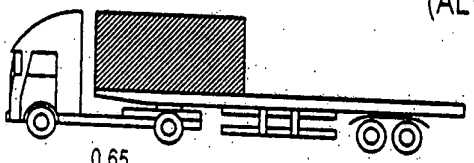


[-] 0,9 5,5 5,5
[t] 6,5 7,5 11
[t] 14 25
[bar/g] 6,6 5,9 e) 5,2

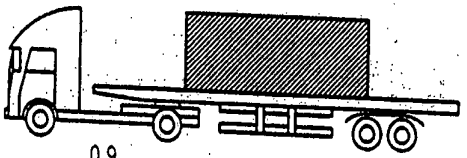


[-] 1,5
[t] 6 4 9 9
[t] 10 28 18
[bar/g] 5,9 6,6 f) 7,3

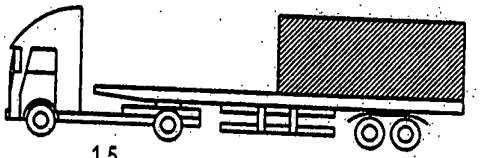
Influencing factor for axle-load ratio (ALV)= 0



[-] 0,65 2 2
[t] 7 11 4
[t] 18 22
[bar/g] 6,1 5,2 g) 4,3



[-] 0,9 5,5 5,5
[t] 6,5 7,5 11
[t] 14 25
[bar/g] 6,6 5,9 h) 5,2



[-] 1,5
[t] 6 4 9 9
[t] 10 28 18
[bar/g] 7,1 6,6 i) 6,1

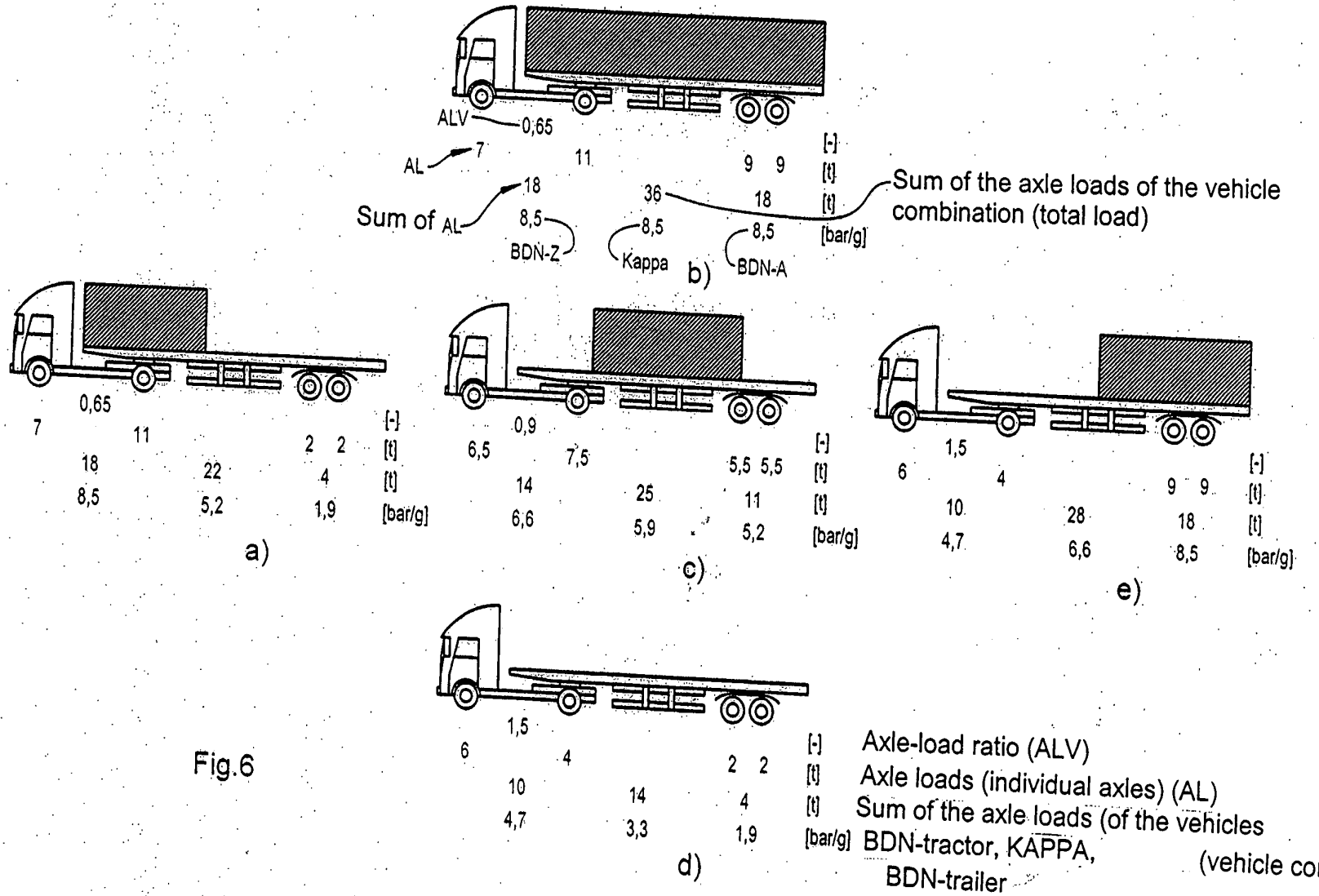
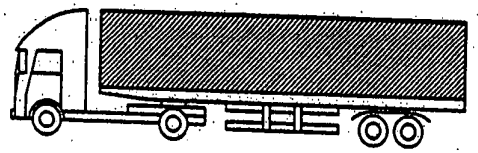


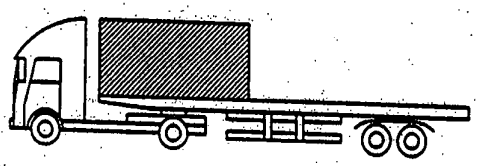
Fig.6

[-] Axle-load ratio (ALV)
[t] Axle loads (individual axles) (AL)
[t] Sum of the axle loads (of the vehicles (vehicle combination)
[bar/g] BDN-tractor, KAPPA, BDN-trailer



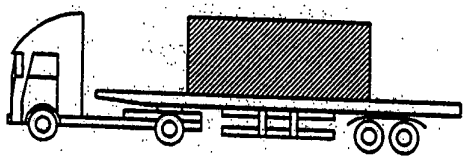
7	11		9 9	[t]
18		36	18	[t]
8,5		8,5	8,5	[bar/g]

b)



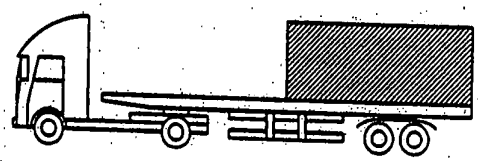
7	11		2 2	[t]
18		22	4	[t]
6,1		5,2	4,3	[bar/g]

a)



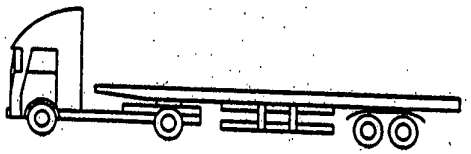
6,5	7,5		5,5 5,5	[t]
14		25	11	[t]
6,6		5,9	5,2	[bar/g]

c)



6	4		9 9	[t]
10		28	18	[t]
7,1		6,6	6,1	[bar/g]

e)



6	4		2 2	[t]
10		14	4	[t]
4,7		3,3	1,9	[bar/g]

d)

Fig.7

Axle loads (individual axles) (AL)
Sum of the axle loads (of the vehicles (vehicle combination))
BDN-tractor, KAPPA, BDN-trailer

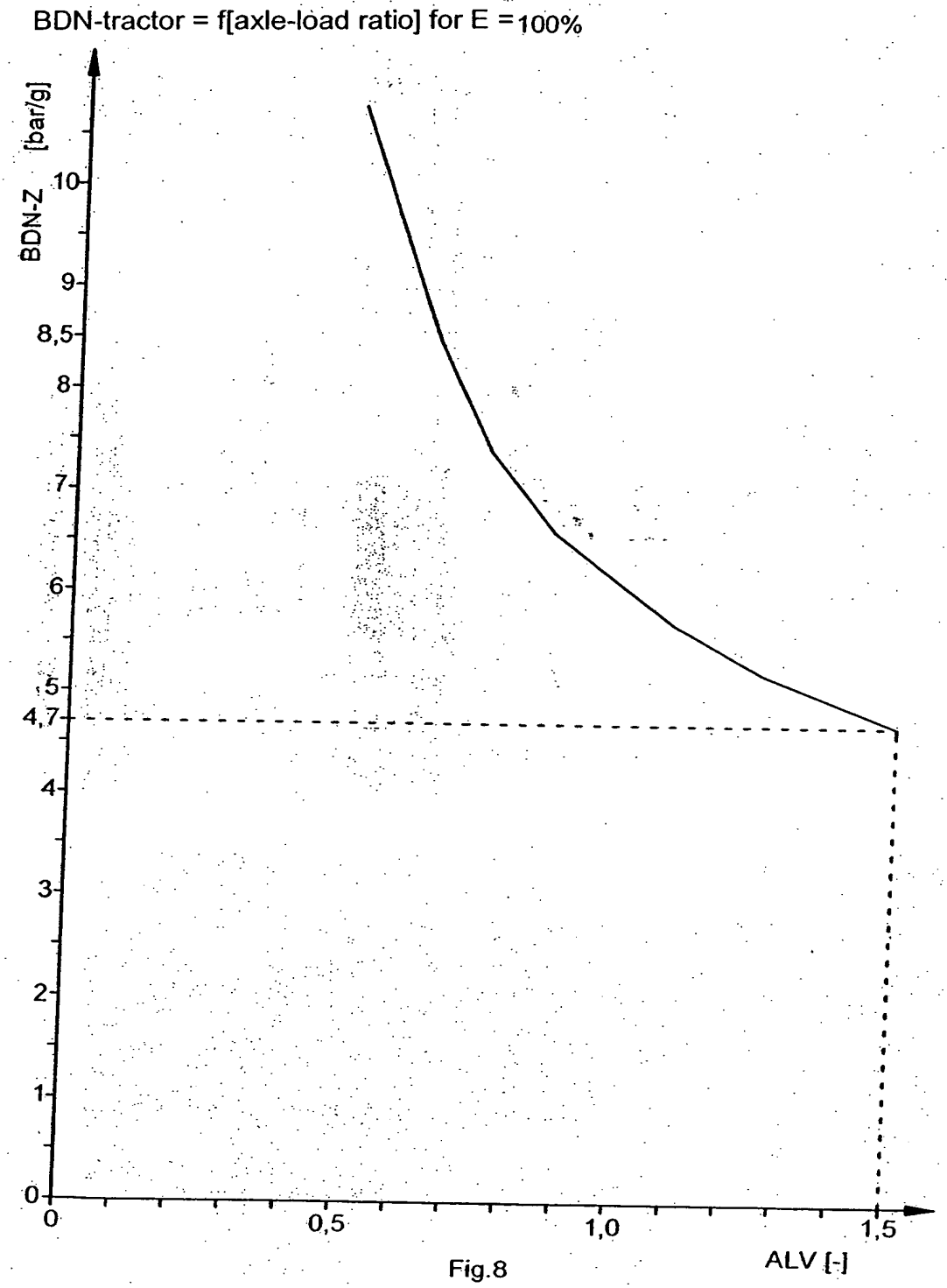

BDN-tractor = f[axle-load ratio] for E = 100%
BDN-Z [bar/g]
10
9
8,5
8
7
6
5
4,7
4
3
2
1
0
0
0,5
1,0
1,5
ALV [-]

Fig.8